

REMARKS

The application has been reviewed in light of the final Office Action dated November 29, 2007. Claims 1-10 were pending. By this Amendment, claims 2 and 3 have been amended by rewriting each of them in independent form, and new claims 11-17, corresponding to claims 4-10 but depending from claim 2, have been added. Accordingly, claims 1-17 are now pending, with each of claims 1-3 being in independent form.

Claims 1 and 4-10 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by Kusunoki et al. (WO 03/026897 A1).

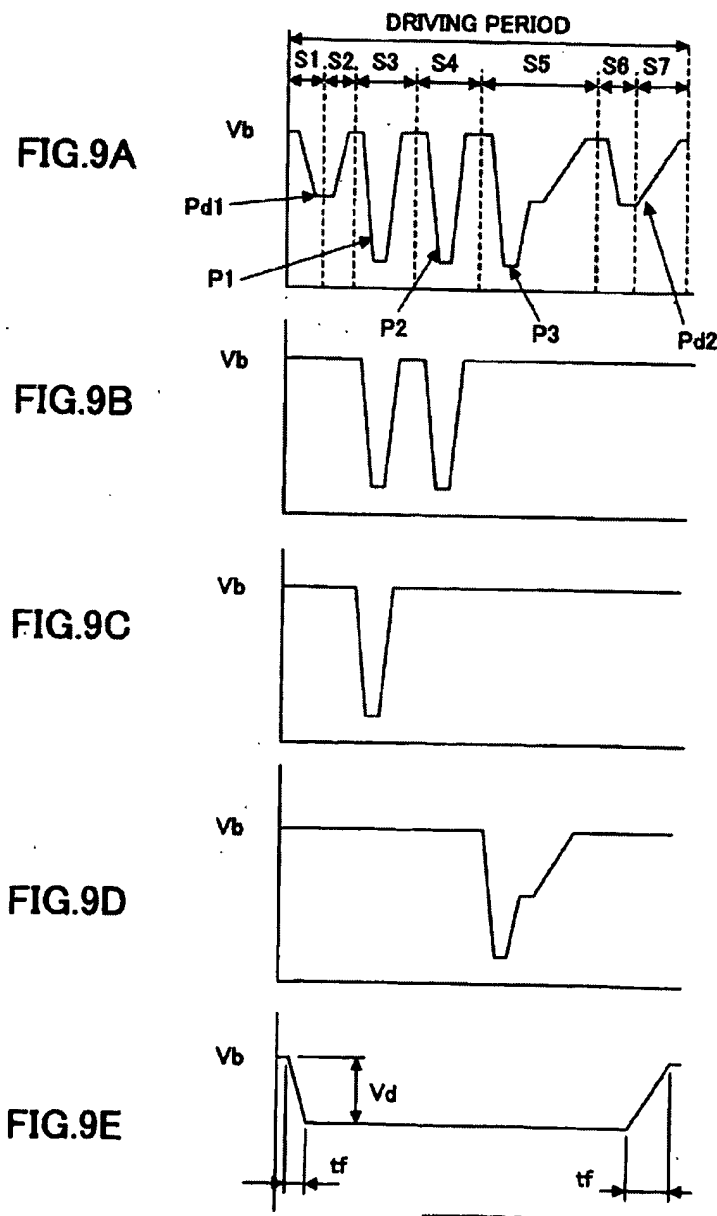
The present application relates to improvements devised by applicant to reduce adverse influence of resonance and obtain improved print quality from an image reproducing and forming apparatus. For example, in the image reproducing and forming apparatus of independent claim 1 of the present application, a driving signal generating unit is configured to generate a driving waveform, based on which a driving unit drives an ejection head, and the driving signal generating unit selects a desired waveform from the driving waveform to produce a driving signal and produces a non-ejecting pulse making use of different portions of the driving waveform, with the non-ejecting pulse having a pulse width greater than that of the ejecting pulse, while producing energy for not ejecting the droplet. Such a non-ejecting pulse is configured with a greater pulse width to excite the head.

Support for the feature that the non-ejecting pulse can have a pulse width greater than that of the ejecting pulse can be found in the application at paragraph [0080] (reproduced below):

[0080] Using the driving signal with the waveform illustrated in FIG. 9, a satisfactory printed image can be obtained even if the inkjet head 14 with the frequency characteristic shown in FIG. 8 is driven at 4 kHz, because either the *ink ejecting pulses shown in FIG. 9B through FIG. 9D or the non-ejecting (dummy) pulse shown in FIG. 9E* are applied to the inkjet head 14. This means that the inkjet head 14 is driven at substantially 8 kHz, and the print data are reproduced as a printed

image of a satisfactory print quality, without influence of resonance at 4 kHz.

As is plainly evident from comparison of the ejecting pulses shown in FIG. 9B through FIG. 9D and the non-ejecting (dummy) pulse shown in FIG. 9E of the present application, the non-ejecting pulse having a pulse width greater than that of the ejecting pulse. Figs. 9A through 9E are reproduced below:



Paragraphs [0015], [0016] and [0099] of the present application merely points out that it is desirable for the non-ejecting pulse to be configured to push out a meniscus of the nozzle and to have a pulse width smaller than a period of pressure-induced resonance in a liquid chamber of the ejection head (not smaller than the width of the ejecting pulse). This aspect is recited in claims 5 and 8 of the present application, and is not inconsistent with the feature that the non-ejecting pulse has a pulse width greater than that of the ejecting pulse.

Further, paragraph [0090] of the application points out that when the width of the non-ejecting pulse is reduced, the effect of avoiding resonance of the inkjet head may be reduced. In addition, paragraph [0116] of the application points out that the applicant's evaluation of various widths of the non-ejecting pulse showed that satisfactory print image quality is obtained with a long pulse width.

On the other hand, the head driving control apparatus proposed by Kusunoki does not output a non-ejecting pulse having a pulse width greater than that of the ejecting pulse.

As already discussed in the record, while Kusunoki (Fig. 16 and page 37, lines 8-16) proposes a non-ejecting pulse, such a non-ejecting pulse as proposed by Kusunoki is produced so as to be as short as possible and as understood by applicant, does not have a pulse width greater than that of the ejecting pulse.

Applicant submits that Kusunoki simply does not disclose or suggest, and it would not have been obvious from common knowledge available to one of ordinary skill in the art at the time of the present invention to modify the apparatus proposed by Kusunoki to obtain, an image reproducing and forming apparatus as recited in independent claim 1 of the present application, wherein the non-ejecting pulse has a pulse width greater than that of the ejecting pulse, while producing energy for not ejecting the droplet.

In addition, the Office Action indicated that claims 2 and 3 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

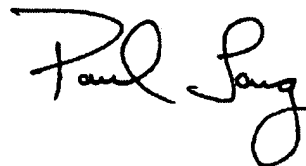
By this Amendment, claims 2 and 3 have been amended by rewriting them in independent form. Since the feature that the non-ejecting pulse has a pulse width greater than that of the ejecting pulse was apparently not considered by the Examiner, such feature has been omitted from amended claims 2 and 3. Independent claims 2 and 3 of the present application, and the claims depending therefrom, are submitted to be now allowable.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul Teng", with a stylized, cursive script.

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